

[SELF-ALIGNED RAISED EXTRINSIC BASE BIPOLAR TRANSISTOR STRUCTURE AND METHOD]

Abstract

A method of fabricating a bipolar transistor structure that provides unit current gain frequency (f_T) and maximum oscillation frequency (f_{MAX}) improvements of a raised extrinsic base using non-self-aligned techniques to establish a self-aligned structure. Accordingly, the invention eliminates the complexity and cost of current self-aligned raised extrinsic base processes. The invention forms a raised extrinsic base and an emitter opening over a landing pad, i.e., etch stop layer, then replaces the landing pad with a conductor that is converted, in part, to an insulator. An emitter is then formed in the emitter opening once the insulator is removed from the emitter opening. An unconverted portion of the conductor provides a conductive base link and a remaining portion of the insulator under a spacer isolates the extrinsic base from the emitter while maintaining self-alignment of the emitter to the extrinsic base. The invention also includes the resulting bipolar transistor structure.